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(c) identification means for identifying one or more said detected stimuli as corresponding to said selected function for producing a function control signal,

(d) receiving means for receiving said function control signal for said controlling said computer operation.

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#### REMARKS

Claims 1-62 remain in this application with Claims 1 and 55 having been amended to expedite the prosecution of this application. Claims 2-54, 56-66 have not been amended and are believed to be patentable for the reasons set forth below.

Applicant has further amended Claim 1 regarding the function selection means to more clearly specify its operation. In particular, Applicant has replaced the phrase "said at least one stimulus" with "stimuli" so that the correspondence is between a plurality of previously-stored user stimuli and a plurality of desired function control signals.

The Examiner has rejected Claims 1, 3-5, 7-17, 19-22, 24, 32-41, 46-48 and 51-66 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,474,082 (Junker, hereinafter "Junker") in view of U.S. Patent No. 5,241,621 (Smart, hereinafter "Smart"). In particular, the Examiner takes the position that Junker discloses all the elements of Claim 1 but is deficient in that Junker does not explicitly state that the apparatus is controlled by the user's thoughts. The Examiner cites the Smart patent and asserts that the Smart patent makes up for that deficiency because:

This reference [Smart] is plain evidence that a computer operation is controlled based on one or more stimuli sensed from at least one user thought and performing function selection means based on a correspondence between a plurality of previously-stored user said at least one stimulus [now amended to "stimuli]. One obvious advantage of this system is that it provides an interactive, structured dialoguing method that enables a user to engage in systematic deliberation and problem-solving.

The system of Junker includes but one method of controlling apparatus using biopotentials of a user. Another viable form of control is one of thought as evidenced by Smart. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to enable control of an apparatus using stored thought such as that found in Smart for the purpose of providing an interactive, structured method enabling a user to engage in deliberation and problem-solving. p. 3 of Office Action.

Applicant respectfully disagrees for the following reasons.

As will be discussed in detail below, it is respectfully submitted that the Examiner is confusing the use of the word "thought" in the present application and in Smart. The apparatus and method of the present invention uses thought to control a computer or other devices. In contradistinction, the Smart system/method controls the user's thoughts by guiding and motivating the user to solve a problem. These are two distinct operations that should not be confused.

The invention of the present application is directed to a thought controlled system (hereinafter the "TCS") wherein the system controls a computer operation based on one or more stimuli sensed from at least one user thought. It should be understood that the present invention is not a biofeedback device which detects whatever the frequency value is at any particular moment. Instead, the present invention is directed to detecting the thought(s) of the user and implementing the thought(s). Thus, the invention of the present application is directed to the thought(s) of the user which may encompass a whole range

of brain frequencies or states. The TCS detects and implements the user's thought(s), e.g., move the cursor to select a particular option on a tool bar, such as create a new file, print a document, associate a "rose" image on the screen with a feeling of joy, etc.

In contradistinction, Junker does not teach nor suggest the detection of user thought(s); what the user is thinking is not discussed. Junker is basically an improvement on biofeedback, i.e., the recognition that an aggregate signal of EEG and EMG biopotentials is necessary for Junker's use of biofeedback. Biofeedback is limited to interpreting frequency spectra detected on the body. Presently, science does not know exactly how these spectra are related to thoughts. What is known is that a person can control changes in these spectra to some degree if the effect of changing his/her thinking is shown to him/her in real time. It is apparently insignificant to Junker how the user's thoughts change the EEG/EMG magnitude and frequency.

The Smart patent concerns managing a dialogue between a knowledge worker, or user, and a novel knowledge processor based upon a Management Issue Recognition and Resolution (MIRR) knowledge model<sup>1</sup>. To accomplish this goal the user must be able to articulate responses to the knowledge processor 10 based on templates that include queries<sup>2</sup> to the user. It should be understood that such articulation in the Smart patent is accomplished by a number of steps whereby the user reads queries on the display 12B and types in responses via the keyboard 12A. This articulation is repeated a number of

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<sup>1</sup>Smart patent, col. 1, lines 8-11.

<sup>2</sup>Smart patent, Appendix C.

times during operation of the Smart device/method<sup>3</sup> and thereby forms a rather complex activity for the user since the user is required to “process” the information, thereby using a range of thoughts (none of which are being directly detected by the knowledge processor 10) and then to articulate a response to the knowledge processor 10 so that it can interact with the user. Furthermore, as stated in the Abstract<sup>4</sup>, a Dialogue Control Interpreter operates to elicit, record and access user responses in sequences that guide and motivate the user to follow predetermined sequences of thought based on the recorded User Awareness database of Imperatives, Situations, Knowledge, and Executive Agents. Thus, the Smart system does not detect the current thought of the user and only relies on guiding/motivating to follow predetermined sequences of thoughts. In other words, the Smart system is not detecting thoughts of the user via a stimuli input means and effecting control of the computer (e.g., print a document, load a file, find a term, control additional devices, etc.) as in the present invention, but is rather “dialoguing” with the user in a manner that guides him/her to a resolution of a problem based on certain sequences of already-known thoughts while requiring the user, through complex articulation (i.e., reading queries from a display 12B, processing them internally and answering the queries via a keyboard 12A), to respond in words. Such a system/method not only teaches away from the present invention, but it defeats the purpose of the present invention: to detect what the user is thinking and to activate the computer, or other device, to accomplish that thought.

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<sup>3</sup>Smart patent, col. 1, lines 63-68 and col. 2, lines 1-12; col. 2, lines 24-41; col. 2, lines 57-68; col. 3, lines 1-30.

<sup>4</sup>Smart patent, Abstract, lines 12-19.

For example, using the present invention, if a user of the present invention chose to print a document, that person would think the thought representative of printing a document and the computer would print the document. In contradistinction, if the user of the Smart system thought of printing a document, nothing would happen. Thus, the actual thought that a user is thinking has no immediate effect on the Smart system; only when the user can articulate an input to the knowledge processor 10 in words does the processor 10 proceed with its method. Furthermore, if the user were trying to solve the problem of "printing a document", what the Smart system would do is give the user a sequence of steps to accomplish the printing of a document but the Smart device would not print the document.

Furthermore, because Junker is not concerned with user's "thoughts", there is no motivation to even combine Junker with Smart. These two patents achieve different goals: Junker relies on detecting and comparing frequency spectra emitted by the brain (EEG signals) and by the muscles (EMG signals), rather than thoughts to achieve only partial control of the computer<sup>5</sup>. On the other hand, Smart elicits responses from a user for processing by a knowledge processor to provide the user with predetermined sequences of thought in order to motivate and guide the user. In other words, on the one hand, Junker is directed towards controlling a computer while Smart is directed towards resolving problems for a user. There is no teaching or suggestion by Smart of controlling

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<sup>5</sup>i.e., certain controls of the computer can be manipulated by the user's EEG/EMG signals (see Figs. 10-13 of Junker) but standard input means, i.e., use of the keyboard or mouse, is still required to select functions from the options bar (Display, Music, Games, Cursor, Setup, Escape, Help), or change gain and response settings (Fig. 10).

a computer, or any apparatus for that matter, to implement a detected thought of the user. Hence, there is no motivation to combine these two patents.

Even if one skilled in the art tried to combine these two references, there is no teaching or suggestion as to how this could be accomplished . For example, given the aggregate signal of EEG and EMG biopotentials from the Junker system, how would this signal be interfaced with the knowledge processor 10 of Smart? In fact, how would that signal be used to supply the requisite responses to all of the questions posed to the user as shown in Appendix C of the Smart patent? How would the knowledge processor 10 determine how to parse and code the aggregate signal of EEG and EMG biopotentials in accordance with the criteria set forth in Appendix B of the Smart patent? In fact, the Smart patent requires complex articulation by the user to provide the requisite responses to the knowledge processor's questions, i.e., the user must be able to type in particular responses from the queries posed on the display by the knowledge processor 10. The Smart system, therefore, requires an articulation by the user to the extent not available from Junker, i.e., Junker just cannot provide the requisite articulation via the aggregate signal of EEG and EMG biopotentials. Thus, Smart does not, and cannot, use brain sensing of the user for "dialoguing" with the knowledge processor 10. As such, one skilled in the art would not be able to combine Junker with Smart.

To that end, Applicant has further amended Claims 1 and 55 to specify that no articulated response is required from the user.

Thus, for all of the above reasons and in view of amended Claims 1 and 55, Applicant respectfully submits that the Examiner's conclusion that "Smart is plain evidence that a computer operation is controlled based on one or more stimuli sensed from at least one stimuli" fails to recognize that not even one stimuli from at least one thought is sensed by Smart, and as such, there cannot be any computer control based on one stimuli from that thought. Furthermore, the Examiner's statement that "it is an obvious advantage of this system (Smart) to provide an interactive, structured dialoguing method that enables a user to engage in systematic deliberation and problem-solving" may accurately describe the Smart system but does not describe the present invention which does not utilize systematic deliberation and problem-solving for knowledge processing; instead, the present invention seeks to eliminate any need for systematic deliberation by detecting the stimuli of at least one thought of the user and implementing that thought. In addition, the Examiner's conclusion that "another viable form of control is one of thought as evidenced by Smart and that it would have been obvious to one skilled in the art to enable control of an apparatus using stored thought to provide an interactive, structured method enabling a user to engage in deliberation and problem-solving" again may describe Smart accurately but does not describe the present invention.

Thus, for all of the above reasons, Applicant respectfully submits that Claims 1 and 55, as amended, are patentable over the art of record and respectfully requests that the §103(a) rejection be withdrawn.

Claim 3 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 4 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 5 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 7 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 8 is dependent upon Claim 4 and is patentable for the same reasons.

Claim 9 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 10 is dependent upon Claim 9 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 11 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 12 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 13 is dependent upon Claim 12 and is patentable for the same reasons.

Claim 14 is dependent upon Claim 13 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 15 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 16 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 17 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 19 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 20 is dependent upon Claim 3 and is patentable for the same reasons.



Claim 21 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 22 is dependent upon Claim 21 and is patentable for the same reasons.

Claim 24 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 32 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 33 is dependent upon Claim 11 and is patentable for the same reasons.

Claim 34 is dependent upon Claim 9 and is patentable for the same reasons.

Claim 35 is dependent upon Claim 34 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 36 is dependent upon Claim 11 and is patentable for the same reasons.

Claim 37 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 38 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 39 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 40 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 46 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 47 is dependent upon Claim 46 and is patentable for the same reasons.

Claim 48 is dependent upon Claim 46 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 51 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 52 is dependent upon Claim 1 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 53 is dependent upon Claim 52 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 54 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 56 is dependent upon Claim 55 and is patentable for the same reasons.

Claim 57 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 58 is dependent upon Claim 57 and is patentable for the same reasons and for the additional reasons set forth in the Applicant's previous response.

Claim 59 is dependent upon Claim 58 and is patentable for the same reasons.

Claim 60 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 61 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 62 is dependent upon Claim 56 and is patentable for the same reasons.

Claim 63 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Smart does not comprise data bases for storing unique user stimuli because Smart does not detect at least one thought from the user. Rather, as discussed above with regard to Claim 1, complex articulation is conducted to elicit particular responses from the user. There is no detection of user stimuli by the Smart system.

Claim 64 is dependent upon Claim 24 and is patentable for the same reasons.

Claim 65 is dependent upon Claim 1 and is patentable for the same reasons.

Claim 66 is dependent upon Claim 1 and is patentable for the same reasons. In addition, Smart does not even mention selecting candidate stimuli, nor even stimuli.

The Examiner has rejected Claim 2 under §103 as being unpatentable over the combination of Junker and Smart in view of U.S. Patent No. 4,757,438 (Thatte et al., hereinafter "Thatte"). In particular, the Examiner asserts that since Junker nor Smart do not reference "magnetic source imaging" as stimuli input means, Thatte, when viewed in combination with Junker and Smart, makes up for that deficiency.

Applicant respectfully disagrees for the same reasons that Claim 1 is patentable over Junker in combination with Smart and for the reasons set forth in the Applicant's previous response.

The Examiner has rejected Claim 18 under §103 as being unpatentable over the combination of Junker and Smart in view of U.S. Patent No. 4,949,726 (Hartzell et al., hereinafter "Hartzell"). In particular, the Examiner asserts that since Junker and Smart do not reference the use of the apparatus by a plurality of users, Hartzell, when viewed in combination with Junker, makes up for that deficiency.

Applicant respectfully disagrees for the same reasons that Claim 1 is patentable over Junker in combination with Smart and for the reasons set forth in the Applicant's previous response.

The Examiner has rejected Claims 6, 23, 25-31, 49 and 50 under §103 as being unpatentable over Junker and Smart in view of U.S. Patent No. 5,546,943 (Gould, hereinafter "Gould"). In particular, the Examiner asserts that since Junker and Smart do not reference "magnetic resonance imaging" as auxiliary stimuli input means, Gould, when viewed in combination with Junker, makes up for that deficiency.

Applicant respectfully disagrees with the rejection of Claim 6 for the same reasons regarding the patentability of Claim 4 since Claim 6 is dependent upon Claim 4.

With respect to Applicant's claims concerning artificial intelligence, namely Claims 23, 25-31 and 49-50, Applicant respectfully disagrees with the Examiner for the following reasons. Claims 23, 25-31 and 49-50 are all dependent upon Claim 1 and are patentable for the same reasons. In addition, Gould only makes a terse reference to the phrase "artificial intelligence" at col. 9, lines 37-43. This terse reference does not teach nor suggest the manner in which artificial intelligence is specified in these claims, e.g., in recognizing and analyzing the signal strength of at least one stimulus. It is unclear what the Examiner means by "AI criteria" and since Gould defines no "AI criteria" it is also unclear as to how Gould makes Claims 23, 25-31 and 49-50 obvious. Thus, for all of these reasons, Applicant respectfully submits that Claims 23, 25-31 and 49-50 are patentable over the art of record.

The Examiner did not address the patentability of Claim 41. Applicant assumes that this was inadvertent and that the rejection of Claim 41 in the prior Office Action is still being maintained by the Examiner. If this is the case, Applicant respectfully disagrees with the rejection of Claim 41 for the same reasons regarding the patentability of Claim 1 since Claim 41 is dependent upon Claim 1.

The Examiner has rejected Claims 42-45 under §103 as being unpatentable over the combination of Junker and Smart in view of U.S. Patent No. 5,325,133 (Adachi, hereinafter "Adachi"). In particular, the Examiner asserts that since Junker does not reference means for detecting movement of the user's eye to initiate a function control

signal, Adachi, when viewed in combination with Junker, makes up for that deficiency. However, Applicant respectfully disagrees with the rejection of Claims 42-45 for the same reasons regarding the patentability of Claim 1 since Claims 42-45 are dependent upon Claim 1.

The Applicant is mindful of the requirement to submit formal acceptable drawings and will do so upon the indication of allowability of this case.

In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 1-66 now appearing in this application are allowable and such favorable action is respectfully requested.

Respectfully submitted,

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